

# PC-Trace Tutorial - Table of Contents

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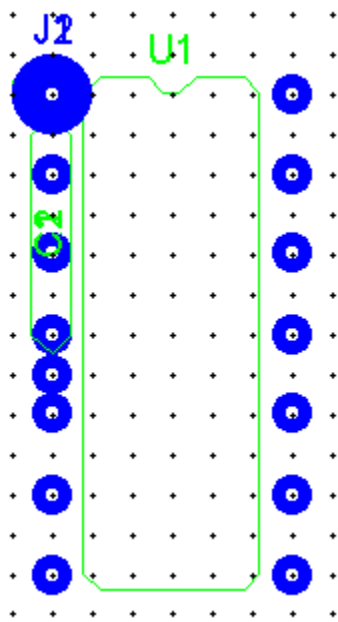
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## Opening Netlist

To load the file created by Schematic Plus, select "Import Netlist" from the File Menu.

Selecting this command will open a dialog box that enables you select the netlist file. Select "TUTORIAL.NLT" and click on the OK button. PC-Trace will load the Netlist. All the parts will be co-located. The import should look something like the picture at the right.



The next step is to move some of the part around and untangle the connections.

## Activating Spider Web

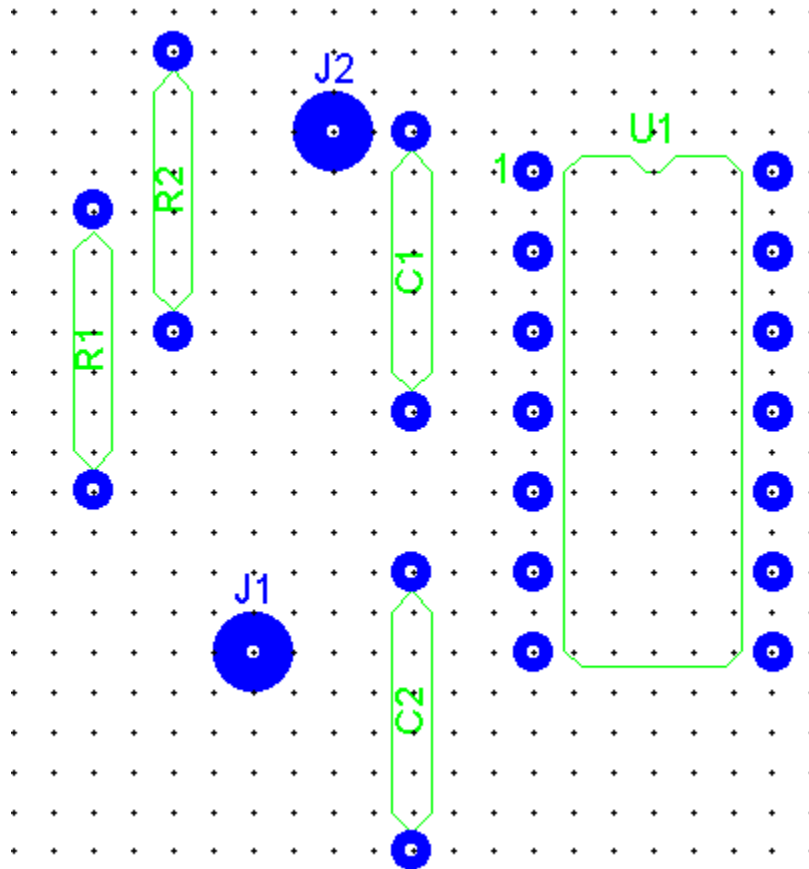
Turn on the Spider Web by selecting "Spider Web" from the View Menu. A number of magenta lines will be displayed on the screen. These lines represent connections that must be completed on the board layout. As connections are completed or deleted, these lines will appear and disappear as long as the Spider Web is active.

## Setting Snap Grid

Change the snap spacing by selecting "Set Snap To" from the Setup Menu. A dialog box will appear prompting you to enter the new snap value. Enter 0.025 in the dialog box. The snap value makes it possible to keep everything lined exactly up. It forces all components, traces, and other drawing entities to the nearest multiple of the snap value. The coordinates in the lower right part of the window will reflect the numeric location of the next mouse click. If snap is on, these values will always be multiples of the snap value.

## Moving Components

Spread the component out on the board. To be able to edit the components, they should be spread out on the board. To move components around, none of the Entities Menu, or buttons, should be selected. Check this by making sure none of the drawing buttons are pressed in, or by opening the Entities Menu and making sure none of the menu items have check marks beside them. To spread components around on the board,



select the component by clicking and holding the left mouse button on one of its pads. If you have selected a component, it will turn gray. Move the mouse to the location that you would like the pad you selected to move to. A rubber band will show the source and destination of the component. Releasing the mouse button will move the component to the new location. Once the components are separated, the components can be edited.

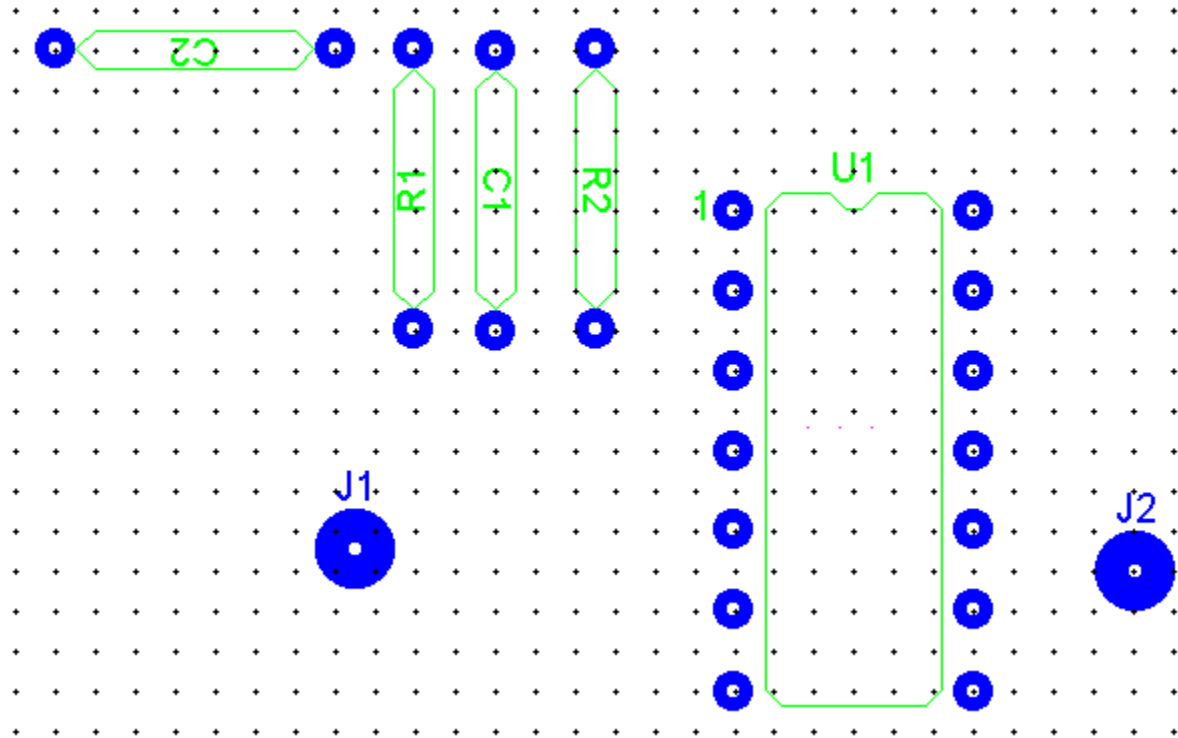
## Editing Components

To edit the components, that is rotate them to simplify routing, one of two methods can be used. To edit a particular component, double click on one of its pads. The component entry dialog box will appear with the information of the component you selected in the box. The other method of editing the component data is to select the "Enter/Edit Components" from the Database Menu. This will open the same dialog box. Two of the buttons within the dialog box are Next and Previous. Clicking on these buttons moves you through the list of components. The currently displayed component number appears in the bottom right of the PC-Trace window. Set the rotations for each component to the following. The default on nelist import is to have 0 degrees of rotation.

C1	180 degrees
C2	90 degrees
J1	0 degrees
J2	0 degrees
R1	0 degrees
R2	180 degrees
U1	0 degrees

## Placing Components

The next step is to again arrange the components to simplify routing. A picture of relative locations is shown below with snap turned off for clarity. Move the components so that they are in these relative positions in relation to each other.



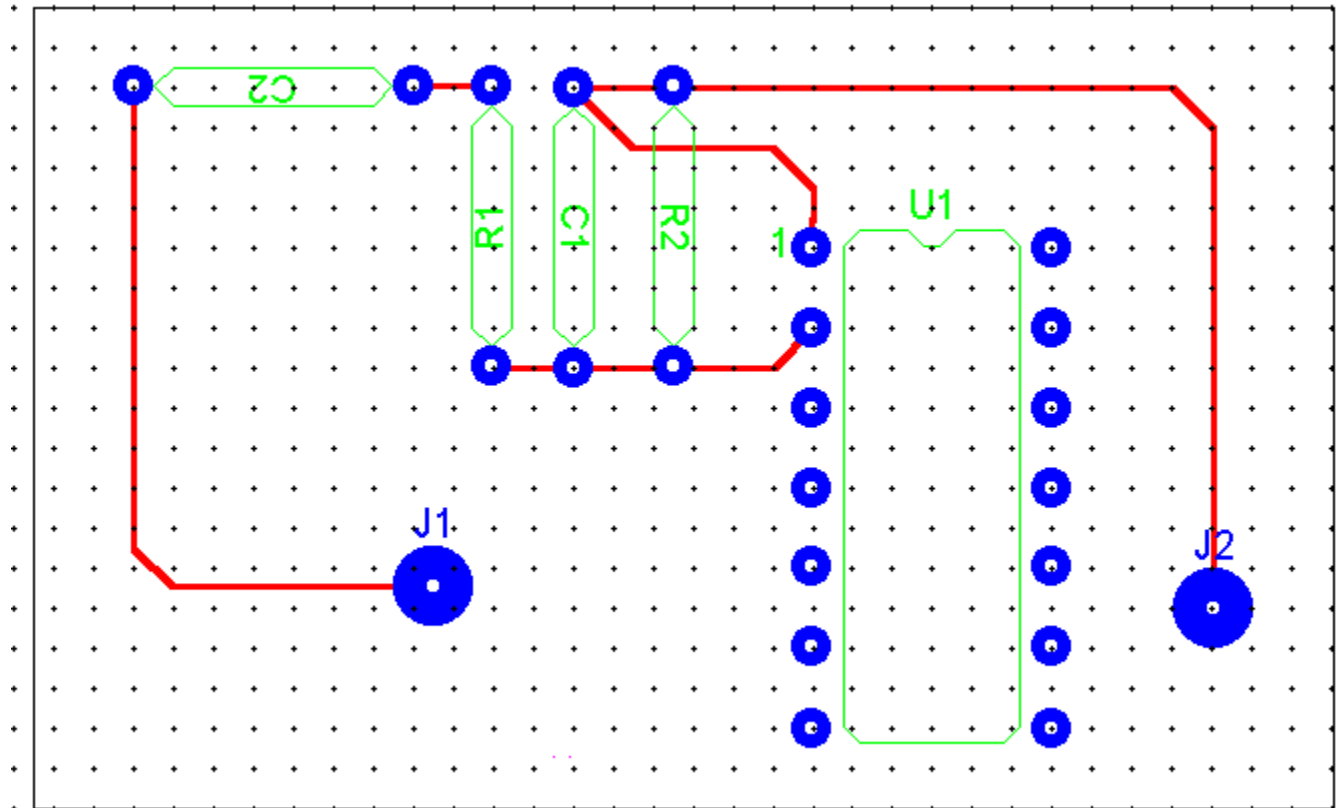
## Drawing Traces

Once the components are in a good location, the traces themselves can be routed. Select the "Trace" command from the Entities Menu to activate trace drawing, or press the "Tr" button on the button bar. To draw a trace, click and release the left button on a starting trace or pad. Move the mouse to the next anchor point and click the left button again. Continue to do this until you reach the destination point of the trace which must be another trace or a pad. When you reach the destination and click on a pad or trace, the trace drawing will end. If you make a mistake while drawing the trace, pressing F2 will undo the previous segment. Pressing F2 with no segments completed will exit the trace drawing routine. To determine which traces need to be drawn, look at the magenta lines and route trace between the pads that are connected by the lines. Always look for shortcut, such as connecting to a closer pad that is already connected to the pad you need to connect to.



## Board Outline

A board should generally have an outline drawn with it. To draw an outline select "Draw Board Outline" from the Entities menu, or press the button that looks like a rectangle on the button bar. Drawing the outline is different than drawing a trace. You must hold down the left button while drawing the line. Releasing the button will select its endpoint. In this tutorial draw a square around the outside of the board layout. The final board layout should look something like the picture below.



## Conclusion

Spend some time getting familiar with the tools and how they work. Read through the help file that is selected by selecting "Index" from the Help Menu. Remember that this is the demo version and important files should be saved frequently. The registered version will allow you to edit the files you create with the demo version, and be able to output whatever format you require.

